



**THE AMALGAMATED SUGAR COMPANY LLC**

3184 ELDER STREET • BOISE, ID 83705  
PHONE: (208) 383-6500 • FAX: (208) 383-6688

February 23, 2007

Idaho Department of Environmental Quality  
Air Quality Permit to Construct Fees  
Fiscal Office  
1410 North Hilton  
Boise, ID 83706-1255

RE: Modification Request No. 6 Evaporator Permit to Construct (No. 067-00001)  
2007 Juice Run  
The Amalgamated Sugar Company LLC (TASCO) Mini-Cassia Facility

Dear Sir or Madam:

Enclosed is the \$1,000 check for the application fee for the attached PTC modification request for the No. 6 Evaporator Permit to Construct (No. 067-00001).

If you have any questions please call Alan Hieb at (208) 438-2115 or me at (208) 383-6500.

Sincerely,

A handwritten signature in cursive script that reads "Dean C. DeLorey".

Dean C. DeLorey  
Manager of Environmental Compliance  
The Amalgamated Sugar Company LLC

DCD:ss

Cc: Boise – Pete Chertudi, John McCreedy, Mike Skromyda  
Mini-Cassia – Alan Hieb, Karen Cummings

RECEIVED

FEB 23 2007

Department of Environmental Quality  
State Air Program



## THE AMALGAMATED SUGAR COMPANY LLC

3184 ELDER STREET • BOISE, ID 83705  
PHONE: (208) 383-6500 • FAX: (208) 383-6688

February 23, 2007

Steve VanZandt  
Air Quality Science Officer  
Idaho Department of Environmental Quality  
1363 Fillmore Street  
Twin Falls, ID 83301

RE: Request for Temporary Permit Modification  
No. 6 Evaporator Permit to Construct (No. 067-00001)  
The Amalgamated Sugar Company LLC (TASCO) Mini-Cassia Facility

Dear Steve:

The Amalgamated Sugar Company LLC (TASCO) requests to temporarily modify the steam loading limitation in Permit to Construct (PTC) No. 067-00001. This request has been prepared in accordance with Idaho's procedures for revising Permits to Construct in IDAPA 58.01.01.209.04.

TASCO requests to temporarily increase the annual steam loading limitation in Condition 2.4 from 1,830,000 Klbs per campaign year to 1,940,000 Klbs per campaign year. Supporting documentation for this permit modification request is included in the following attachments:

- Attachment A - Certification Statement
- Attachment B - Proposed Permit Revision
- Attachment C - Emission Estimates
- Attachment D - Ambient Impact Analysis
- Attachment E - Revised Draft of Condition 2.4 of Permit to Construct No. 067-00001

If you have any questions, feel free to contact either Dean C. DeLorey at (208) 383-6532 or me at (208) 438-2115.

Sincerely,

K. Pete Chertudi  
Sr. Vice President  
The Amalgamated Sugar Company LLC

RECEIVED

FEB 23 2007

Department of Environmental Quality  
State Air Program

DCD/ss

Attachment

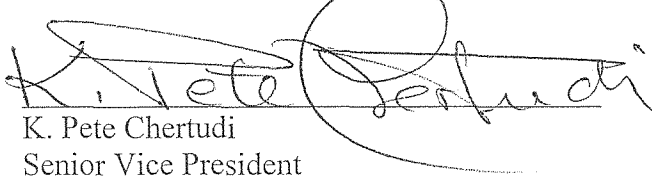
cc: IDEQ – Bill Rogers, Boise  
Boise – John McCreedy, Dean DeLorey, Mike Skromyda  
Mini-Cassia – Alan Hieb, Karen Cummings

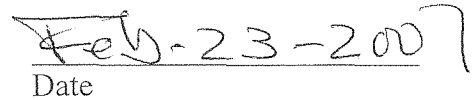
## Attachment A

### Certification Statement

Based on information and belief formed after reasonable inquiry, I certify the statements and information in this document are true.

Signature of Owner or Responsible Official

  
K. Pete Chertudi  
Senior Vice President

  
Date

## **Attachment B**

### **Proposed Temporary Permit Revision No. 6 Evaporator PTC**

**ATTACHMENT B**  
**Proposed Temporary Permit Revision**  
**No. 6 Evaporator PTC**

Overview

The Amalgamated Sugar Company LLC (TASCO) proposes to temporarily increase the annual steam loading limitation in the No. 6 Evaporator Permit to Construct (No. 067-00001). TASCO proposes to increase the annual steam production limitation in Condition 2.4 from 1,830,000 Klbs per year to 1,940,000 Klbs per year for the 2006 beet campaign year. This increase is needed while IDEQ processes the Tier II Operating Permit/Permit to Construct application originally submitted to IDEQ on September 1, 2004. A Tier II Operating Permit/PTC is expected to be issued by IDEQ with a new annual steam loading limit by the start of the 2007 beet campaign in September 2007.

Project Description

The annual steam loading increase is needed to avoid the shipment of approximately 64,000 tons of thick juice from the Mini-Cassia facility for processing at other TASCO facilities. The Mini-Cassia facility has eight (8) thick juice storage tanks. Following the beet campaign, stored thick juice is transferred to the sugar end and processed into granulated sugar. Due to a number of factors, the 1,830,000 Klbs steam per year limit will be reached after only 6 of 8 juice tanks are processed. To process the 2006 beet crop and all 8 juice tanks, a total of approximately 1,940,000 Klbs steam is required.

There are both environmental and economic benefits for processing the two remaining tanks of thick juice at the Mini-Cassia facility. Shipping of thick juice will result in increased on-road mobile emissions from diesel-fueled vehicles required to transport the 64,000 tons of juice. The cost to transport the juice is estimated at approximately \$400,000. The Nampa and Twin Falls facilities are less energy efficient than the Mini-Cassia facility. Therefore, more fuel and associated emissions will be generated to process the thick juice at the other facilities.

Equipment Changes

There are no equipment changes associated with this requested permit change which will increase emissions. To offset the emissions increases due to increased hours of operation, overfire air system and/or flue gas recirculation air system improvements and/or fine tuning will be implemented on the B&W stoker coal-fired boiler (see Attachment C.1). As per EPA guidance, overfire air system improvements will decrease NO<sub>x</sub> emissions by up to 30%.

Emissions

Since only one boiler and the sugar end equipment operate during the juice run, daily emissions are only a fraction of the beet campaign<sup>1</sup>. In order to process all eight juice tanks, an additional 110,000 Klbs steam above the 1,830,000 Klbs limit will be required.

---

<sup>1</sup> During the beet campaign, all emission sources are operating including the boilers, pulp dryers and lime kilns.

Juice run boiler steam can be provided by any one of the following three boilers at the Mini-Cassia facility: 1) B&W coal-fired stoker boiler; 2) Erie City pulverized coal and natural gas-fired boiler; and 3) Nebraska backup natural gas-fired boiler. The B&W and Erie City boilers normally operate during the juice run. For example, during last year's 2006 juice run, the B&W and Erie City boilers operated for 76 and 42 days, respectively.

Estimated emissions for an additional 110,000 Klbs steam per year are provided in Attachment C.2 for each boiler. For the Erie City boiler, estimates are provided for coal and natural gas. The preferred alternative is to operate the B&W boiler on coal.

In order to offset the emissions increases, TASC0 proposes to operate the B&W boiler with combustion air improvements or operate the Erie City boiler or Nebraska boiler on natural gas only. This will ensure that boiler emissions from the processing of the 2 remaining thick juice storage tanks are below the significance levels (see Attachment C.3).

#### Ambient Air Quality Impact Analysis

A conservative ambient air quality impact analysis was conducted for the 2007 juice run including the additional 110,000 Klb steam increase. Though not required, short-term ambient impacts were evaluated. In addition, total annual juice run emissions were evaluated. As shown in Attachment D, predicted air pollutant concentrations are all conservatively well below the National Ambient Air Quality Standards (NAAQS).

#### Regulatory Analysis – Toxic Air Pollutants (TAP's)

In accordance with Idaho's TAP's preconstruction standards (IDAPA 58.01.01.210), net annual increases of trace elements from boiler operation during the juice run were evaluated. As shown in Appendix C, net annual emissions were estimated for a 110,000 Klbs increase, based on the No. 6 Evaporator PTC application submitted to IDEQ on August 11, 2002. Since estimated net emissions are greater than the screening levels in IDAPA 58.01.01.526 an air quality impact analysis was conducted and is provided in Attachment D.

#### Regulatory Analysis – Criteria Pollutants

Increasing the steam production limit will result in only minor emissions increases. Attachment E includes proposed revisions to the No. 6 Evaporator PTC issued by IDEQ on June 14, 2006. Proposed revisions include federally enforceable limits which ensure emissions from the 110,000 Klb steam increase remain below significance levels. As a result, this is a minor modification to the No. 6 Evaporator PTC.

**Attachment C**

**Emission Estimates**

## **Attachment C.1**

### **Combustion Air System Improvements B&W Boiler Mini-Cassia Facility**

Combustion Air Tuning / NO<sub>x</sub> Reduction  
B&W Boiler  
Mini-Cassia Facility

Juice Run 2007

To reduce nitrogen oxide (NO<sub>x</sub>) emissions from its Mini-Cassia facility, TASCO is proposing to perform the following on the facility's B&W boiler:

- a.) Fine tune boiler combustion air system and /or
- b.) Improve the overfire air (OFA) and/or
- c.) Install a flue gas recirculation (FGR) system.

These items can provide NO<sub>x</sub> control for both stoker and pulverized coal (PC) boilers.

EPA recognizes a modern, properly operating OFA system has the potential to reduce NO<sub>x</sub> emissions by 20-30 % (AP-42, Table 1.1-2). On a stoker boiler, the principle behind using OFA for NO<sub>x</sub> control is to create "staged" combustion zones by properly controlling the distribution of undergrate and overfire air. By controlling the distribution of combustion air above and below the grate, more efficient combustion can be accomplished without the addition of excessive airflows.

Flue gas recirculation (FGR) is also recognized as a NO<sub>x</sub> control option for boiler flue gases. FGR systems have shown the potential to reduce NO<sub>x</sub> emissions in industrial boilers by recirculating a portion of the boiler flue gas (up to 20 percent) into the combustion air stream. This process reduces the maximum combustion temperature and reduces the percentage of oxygen in the combustion air/flue gas mix.

By executing the proposed improvements on the B&W boiler, a 25% NO<sub>x</sub> reduction is expected (See Table I, below.).

Table I.  
NO<sub>x</sub> Emission Factors for B&W Stoker Boiler

Current Emission Factor	1.24 lbs. NO <sub>x</sub> / 1000 lbs. steam
Target Emission Factor	0.93 lbs. NO <sub>x</sub> / 1000 lbs. steam

Table 1.1-2. NO<sub>x</sub> CONTROL OPTIONS FOR COAL-FIRED BOILERS<sup>a</sup>

Control Technique	Description of Technique	Applicable Boiler Designs	NO <sub>x</sub> Reduction Potential <sup>b</sup> (%)	Commercial Availability/R & D Status	Comments
<b>Combustion Modifications</b>					
Load reduction	Reduction of coal and air	Stokers	Minimal	Available	Applicable to stokers that can reduce load without increasing excess air; may cause reduction in boiler efficiency; NO <sub>x</sub> reduction varies with percent load reduction.
Operational modifications (BOOS, LEA, BF, or combination)	Rearrangement of air or fuel in the main combustion zone	Pulverized coal boilers (some designs); Stokers (LEA only)	10 - 20	Available	Must have sufficient operational flexibility to achieve NO <sub>x</sub> reduction potential without sacrificing boiler performance.
Overfire Air	Injection of air above main combustion zone	Pulverized coal boilers and stokers	20 - 30	Available	Must have sufficient furnace height above top row of burners in order to retrofit this technology to existing boilers.
Low NO <sub>x</sub> Burners	New burner designs controlling air-fuel mixing	Pulverized coal boilers	35 - 55	Available	Available in new boiler designs and can be retrofit in existing boilers.
LNB with OFA	Combination of new burner designs and injection of air above main combustion zone	Pulverized coal boilers	40 - 60	Available	Available in new boiler designs and can be retrofit in existing boilers with sufficient furnace height above top row of burners.
Reburn	Injection of reburn fuel and completion air above main combustion zone	Pulverized coal boilers, cyclone furnaces	50 - 60	Commercially available but not widely demonstrated	Reburn fuel can be natural gas, fuel oil, or pulverized coal. Must have sufficient furnace height to retrofit this technology to existing boilers.

BOOS – Burners out of service  
 LEA – Low excess air  
 BF – biased burner firing  
 OFA – Over-fire air  
 LNB – Low NO<sub>x</sub> Burners

## **Attachment C.2**

### **Boiler House Emission Data Summary 110,000 Klbs Steam Mini-Cassia Facility**

# EMISSION DATA SUMMARY - BOILER HOUSE

2007 Juice Run

110,000 klbs steam Net Steam Increase

NO.	BOILER	POLLUTANT	UNIT	N LB/UNIT	REFERENCE	Emissions tons/y
S-B1	B & W BOILER - STEAM (coal)	PM/PM10	1000 lbs steam	0.177	PM compliance test Dec 2003	9.7
		SO2	1000 lbs steam	0.440	AP-42, 9/98, Table 1.1-3 & 80 % scrubber control	24.2
		SO2	1000 lbs steam	0.184	Eng. Stack Test Nov. 2002	10.1
		CO	1000 lbs steam	0.316	AP-42, 9/98, Table 1.1-3	17.4
		NOx	1000 lbs steam	1.24	Oct. 2005 Engineering Stack Test	68.2
		NOx	1000 lbs steam	0.93	25% Reduction with Overfire Air	51.2
S-B2	ERIE CITY BOILER - STEAM (coal)	VOC	1000 lbs steam	0.0047	TNMOC	0.3
		PM/PM10	1000 lbs steam	0.306	IDAPA 58.01.01.677 (0.1 gr/dscf at 8% O <sub>2</sub> )	16.8
		PM10	1000 lbs steam	0.306	Assume PM10 is 100% of PM	16.8
		SO2	1000 lbs steam	0.131	Eng. Stack Test Nov. 2002	7.2
		CO	1000 lbs steam	0.020	Eng. Stack Test Feb. 2005	1.1
		NOx	1000 lbs steam	1.29	Oct. 2005 Engineering Stack Test	71.0
S-B2	ERIE CITY BOILER - STEAM (gas)	VOC	1000 lbs steam	0.0050	AP-42 9/98, Table 1.1-19, PC, methane & TNMOC	0.3
		PM	1000 lbs steam	2.94E-02	IDAPA 58.01.01.677 (0.015 gr/dscf at 3% O <sub>2</sub> )	1.6
		PM10	1000 lbs steam	2.94E-02	AP-42, 7/98, Table 1.4-2	1.6
		SO2	1000 lbs steam	8.10E-04	AP-42, 7/98, Table 1.4-2	0.045
		CO	1000 lbs steam	1.10E-01	AP-42, 7/98, Table 1.4-1	6.1
		NOx	1000 lbs steam	3.70E-01	AP-42, 7/98, Table 1.4-1	20.4
S-B3	NEBRASKA BOILER - STEAM (gas)	VOC	1000 lbs steam	7.30E-03	AP-42, 7/98, Table 1.4-2	0.4
		PM	1000 lbs steam	7.50E-03	AP-42, Table 1.4-2 (7/98) for natural gas combustion	0.4
		PM10	1000 lbs steam	7.50E-03	AP-42, Table 1.4-2 (7/98) for natural gas combustion	0.4
		SO2	1000 lbs steam	7.50E-04	AP-42, 7/98, Table 1.4-2	0.04
		CO	1000 lbs steam	9.25E-03	Compliance test at Nampa (Riley Boiler 1/04)	0.5
		NOx	1000 lbs steam	2.50E-01	NSPS NOx	13.8
		VOC	1000 lbs steam	6.70E-03	AP-42, 7/98, Table 1.4-2	0.4

## **MINI-CASSIA**

### **B&W BOILER (S-B1) – Coal EMISSION FACTORS February 15, 2007**

#### **PARTICULATE MATTER (PM10)**

A PM compliance test was conducted on the B&W boiler on December 2 and 3, 2003. The stack test report was submitted to IDEQ on March 2, 2004. The results are summarized as follows:

$$(26.49 \text{ lbs/h}) / (165 \text{ Klbs/h}) = 0.161 \text{ lbs/Klbs}$$

Assume a 10% back half catch for PM10, then

$$0.161 \times 1.10 = 0.177 \text{ lbs/Klbs}$$

#### **SULFUR DIOXIDE (SO<sub>2</sub>)**

The B&W boiler SO<sub>2</sub> emission factor is based on engineering testing conducted at the Mini-Cassia facility on 11/19/02.

Test results show an average emissions rate over three runs of 28.3 lbs SO<sub>2</sub>/hour. Steam loading rate during these tests average 154 Klbs/hour.

$$(28.3 \text{ LB SO}_2/\text{hour}) / (154 \text{ Klbs steam/hour}) = 0.184 \text{ lbs SO}_2/\text{Klb steam}$$

#### **NITROGEN OXIDE (NO<sub>x</sub>)**

The B&W boiler NO<sub>x</sub> emission factor is based on engineering testing conducted at the Mini-Cassia facility on 10/14/05.

Test results show an average emissions rate over three runs of 191 lbs NO<sub>x</sub>/hour. Steam loading rate during these tests averaged 154 Klbs/hour.

$$(191 \text{ lb NO}_x/\text{hour}) / (154 \text{ Klbs steam/hour}) = 1.24 \text{ lbs NO}_x \text{ Klb steam}$$

With the installation of over-fire air, assume a 25% NO<sub>x</sub> reduction, then  
 $1.24 (1-.25) = 0.93 \text{ lbs/Klbs}$ .

## MINI-CASSIA

### ERIE CITY BOILER (S-B2) – Coal EMISSION FACTORS February 2, 2007

#### PARTICULATE MATTER (PM10)

The permit based on IDAPA 58.01.01.677 for this boiler is 0.100 grains/dscf corrected at 8% O<sub>2</sub>. The maximum capacity of the boiler while firing coal is 220,000 lbs steam/hr and 297 MMBtu input/hr (calculation based on heat content of the steam of 1080 Btu/lb steam and 80% boiler efficiency) and a maximum of 15.3 tons coal/hr. The heat content of coal is conservatively assumed to be 9700 Btu/lb coal. The estimated stack gas flow, from 40 CFR 60 Appendix A Method 19, for sub-bituminous coal combustion, adjusted at 8% O<sub>2</sub>:

$$Fd = 0780 \text{ dscf/MMBtu} * (20.9/(20.9-8)) = 15,845 \text{ dscf/MMBtu at } 8\% \text{ O}_2$$

$$15,845 \text{ dscf/MMBtu} * 297 \text{ MMBtu/hr} * 1\text{hr}/60 \text{ min} = 78,433 \text{ dscfm}$$

$$0.100 \text{ grains/dscf} * 78,433 \text{ dscf/min} * 60 \text{ min/hr} * 1 \text{ lb}/7000 \text{ grains} = 67.23 \text{ lb/hr}$$

$$\text{PM Emission Factor} = (67.23 \text{ lbs/h})/(1 \text{ h}/220 \text{ Klbs steam}) = 0.306 \text{ lbs/Klbs steam}$$

The PM10 fraction is assumed to be 100% of the PM fraction.

$$\text{PM10 Emission Factor} = 0.306 \text{ lbs/Klbs steam}$$

#### SULFUR DIOXIDE (SO<sub>2</sub>)

The Erie City boiler SO<sub>2</sub> emission factor is based on engineering testing conducted at the Mini-Cassia facility on 11/19/02.

Test results show an average emissions rate over three runs of 23.5 lbs SO<sub>2</sub>/hour. Steam loading rate during these tests average 179.67 Klbs/hour.

$$(23.5 \text{ LB SO}_2/\text{hour})/(179.67 \text{ Klbs steam/hour}) = 0.131 \text{ lbs SO}_2/\text{Klb steam}$$

#### NITROGEN OXIDE (NO<sub>x</sub>)

The Erie City boiler NO<sub>x</sub> emission factor is based on engineering testing conducted at the Mini-Cassia facility on 10/14/05.

Test results show an average emissions rate over three runs of 223 lbs NO<sub>x</sub>/hour. Steam loading rate during these tests averaged 173 Klbs/hour.

$$(223 \text{ lb NO}_x/\text{hour})/(173 \text{ Klbs steam/hour}) = 1.289 \text{ lbs NO}_x \text{ Klb steam}$$

### CARBON MONOXIDE (CO)

The CO emissions factor is based on engineering testing conducted at the Mini-Cassia facility on February 16, 2005. Test results measured an average CO emissions rate of 2.95 lbs/h at a steam loading rate of 180,000 lbs/h.

$$EF = 2.95/180 = 0.02 \text{ lbs CO/Klb steam}$$

## **Attachment C.3**

### **Net Emissions Changes 2007 Juice Run Mini-Cassia Facility**

**NET EMISSIONS CHANGES - COAL**  
**2007 JUICE RUN**  
**MINI-CASSIA FACILITY**

**110,000 Klbs STEAM INCREASE - 30 DAYS (tons)**

Source	PM/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
B&W <sup>a</sup>	9.7	10.1	51.2	17.4	0.3
Net	9.7	10.1	51.2	17.4	0.3

<sup>a</sup> With NOx reduction improvements.

**OFFSETS - JUICE RUN - 95 DAYS (tons)**

Source	PM/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Scenario #1 <sup>a</sup>	40.3	27.4	215.9	31.1	0.8
Scenario #2 <sup>b</sup>	33.5	30.1	168.1	46.6	0.8
Net	-6.8	2.7	-47.8	15.5	0.0

<sup>a</sup> B&W @ 52 days without NOx reduction improvements and Erie City @ 43 days.

<sup>b</sup> B&W @ 81 days with NOx reduction improvements and Erie City @ 14 days.

**OVERALL NET EMISSIONS 2007 JUICE RUN (tons)**

Source	PM/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Boilers	2.9	12.8	3.4	32.9	0.3

\* \* \* \* \*

**PROJECTED NOX EMISSIONS REDUCTIONS (tons)**  
**2007 BEET CAMPAIGN & JUICE RUN**

Source	PM/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
B&W	----	----	-145	----	----

**NET EMISSIONS CHANGES**  
**2007 JUICE RUN**  
**MINI-CASSIA FACILITY**

**110,000 Klbs STEAM INCREASE - 30 DAYS (tons)**

<b>Source</b>	<b>PM/PM10</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>
Erie City-Gas	1.6	0.045	20.4	6.1	0.4
Net	1.6	0.0	20.4	6.1	0.4

2005 Juice Run @ 52.0 days without Overfire Air on B&W & 43 day Erie City Operation  
SUMMARY OF CRITERIA POLLUTANT EMISSIONS  
Mini Cassia Facility

Table I

		PM			PM10			SO2			CO			NOx			VOC			95.00 Juice run (days)		
Source	ID	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr
B&W Boiler @ 52.0 days	S-B1	26.6	3.8	16.6	26.6	3.8	16.6	27.6	3.9	17.2	47.4	6.8	29.6	186.0	26.5	116.1	0.7	0.1	0.4			
Erie City Boiler @ 43.0 days	S-B2	45.9	5.4	23.7	45.9	5.4	23.7	19.7	2.3	10.1	3.0	0.4	1.5	193.5	22.8	99.8	0.8	0.1	0.4			
Total		72.5	9.2	40.3	72.5	9.2	40.3	47.3	6.2	27.4	50.4	7.1	31.1	379.5	49.3	215.9	1.5	0.2	0.8			

# SECTION 3B. PRODUCTION DATA - BOILER HOUSE

NO.		MATERIAL	UNITS	Max Hr	Avg Hr	ANNUAL
S-B1	B & W BOILER	Steam - Beet	1000 lbs	190.0	175	741300
		Coal - Beet	Tons	13.2	11.1	47020
		Steam - Juice	1000 lbs	150.0	150	187200
		Coal - Juice	Tons	13.2	11.1	
S-B2	ERIE CITY BOILER	Steam (Coal)-Beet	1000 lbs	220.0	190	804840
		Coal (1)-Beet	Tons	16.8	13.2	55915
		Steam (Natural Gas)-Beet	1000 lbs	250.0	250	1059000
		Natural Gas (1)-Beet	MMcf	0.286	0.286	
		Steam (Coal)-Juice	1000 lbs	150.0	150	154800
		Coal (1)-Juice	Tons	16.8	12.2	27816
		Steam (Natural Gas)-Juice	1000 lbs	143.0	143	18800
		Natural Gas (1)-Juice	MMcf	0.3	0.2	456

SECTION 3C. EMISSION FACTORS - BOILER HOUSE

NO.		POLLUTANT	UNIT	EMISSION FACTOR (1)		REFERENCE
					LB/UNIT	
S-B1	B & W BOILER - STEAM(coal)	PM	1000 lbs	0.177		PM Compliance Test Dec 2003
		PM10	1000 lbs	0.177		PM Compliance Test Dec 2003
		SO2	1000 lbs	0.184		Eng. Stack Test Nov. 2002
		CO	1000 lbs	0.316		AP42, 9/98, Table 1.1-3
		NOx	1000 lbs	1.24		Oct. 05 Engineering Stack Test
		VOC	1000 lbs	0.0047	AP-42 9/98, Table 1.1-19, spreader stoker, methane & TNMOC	
	- COAL	Lead	Tons	4.20E-04		EPA AP-42, Table 1.1-18
		Fluorine	Tons	6.34E-03		Mass balance based on USGS data
		Beryllium	Tons	2.10E-05		EPA AP-42, Table 1.1-18
		Mercury	Tons	7.00E-05		Mass balance based on USGS data
		H2SO4	Tons	3.31E-01		EPA AP-42, Table 1.1-3, footnote b.
	S-B2	ERIE CITY BOILER - STEAM (coal)	PM	1000 lbs	0.306	IDAPA 58.01.01.677
PM10			1000 lbs	0.306		Assume PM10 is 100% of PM
SO2			1000 lbs	0.131		Eng. Stack Test Nov. 2002
CO			1000 lbs	0.020		Eng. Stack Test Feb 2005
NOx			1000 lbs	1.29		Oct. 05 Engineering Stack Test
VOC			1000 lbs	0.0050	AP-42 9/98, Table 1.1-19, PC, methane & TNMOC	
- COAL		Lead	Tons	4.20E-04		EPA AP-42, Table 1.1-18
		Fluorine	Tons	6.34E-03		Mass balance based on USGS data
		Beryllium	Tons	2.10E-05		EPA AP-42, Table 1.1-18
		Mercury	Tons	7.00E-05		Mass balance based on USGS data
		H2SO4	Tons	3.31E-01		EPA AP-42, Table 1.1-3, footnote b.

2005 Juice Run @ 81 days with Overfire Air on B&W & 14 day Erie City Operation  
SUMMARY OF CRITERIA POLLUTANT EMISSIONS  
Mini Cassia Facility

Table I

Source	ID	PM			PM10			SO2			CO			NOx			VOC		
		max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr	max lbs/hr	avg lbs/h	year tns/yr
B&W Boiler @ 81 days	S-B1	26.6	5.9	25.8	26.6	5.9	25.8	27.6	6.1	26.8	47.4	10.5	46.1	139.5	31.0	135.6	0.7	0.2	0.7
Erie City Boiler @ 14 days	S-B2	45.9	1.8	7.7	45.9	1.8	7.7	19.7	0.8	3.3	3.0	0.1	0.5	193.5	7.4	32.5	0.8	0.0	0.1
Total		72.5	7.7	33.5	72.5	7.7	33.5	47.3	6.9	30.1	50.4	10.6	46.6	333.0	38.4	168.1	1.5	0.2	0.8

# SECTION 3B. PRODUCTION DATA - BOILER HOUSE

NO.		MATERIAL	UNITS	Max Hr	Avg Hr	ANNUAL
S-B1	B & W BOILER	Steam - Beet	1000 lbs	190.0	175	741300
		Coal - Beet	Tons	13.2	11.1	47020
		Steam - Juice	1000 lbs	150.0	150	291600
		Coal - Juice	Tons	13.2	11.1	
S-B2	ERIE CITY BOILER	Steam (Coal)-Beet	1000 lbs	220.0	190	804840
		Coal (1)-Beet	Tons	16.8	13.2	55915
		Steam (Natural Gas)-Beet	1000 lbs	250.0	250	1059000
		Natural Gas (1)-Beet	MMcf	0.286	0.286	
		Steam (Coal)-Juice	1000 lbs	150.0	150	50400
		Coal (1)-Juice	Tons	16.8	12.2	27816
		Steam (Natural Gas)-Juice	1000 lbs	143.0	143	18800
		Natural Gas (1)-Juice	MMcf	0.3	0.2	456

## SECTION 3C. EMISSION FACTORS - BOILER HOUSE

NO.		POLLUTANT	UNIT	EMISSION FACTOR (1)		REFERENCE	
					LB/UNIT		
S-B1	B & W BOILER - STEAM(coal)	PM	1000 lbs	0.177		PM Compliance Test Dec 2003	
		PM10	1000 lbs	0.177		PM Compliance Test Dec 2003	
		SO2	1000 lbs	0.184		Eng. Stack Test Nov. 2002	
		CO	1000 lbs	0.316		AP42, 9/98, Table 1.1-3	
		NOx	1000 lbs	0.93		Oct. 05 Eng. Test & Overfireair 25 % Reduction	
		VOC	1000 lbs	0.0047		AP-42 9/98,Table 1.1-19, spreader stoker, methane & TNMOC	
	- COAL	Lead	Tons	4.20E-04		EPA AP-42,Table 1.1-18	
		Fluorine	Tons	6.34E-03		Mass balance based on USGS data	
		Beryllium	Tons	2.10E-05		EPA AP-42,Table 1.1-18	
		Mercury	Tons	7.00E-05		Mass balance based on USGS data	
		H2SO4	Tons	3.31E-01		EPA AP-42,Table 1.1-3, footnote b.	
	S-B2	ERIE CITY BOILER - STEAM (coal)	PM	1000 lbs	0.306		IDAPA 58.01.01.677 0.1 gr/dscf grain loading standard
			PM10	1000 lbs	0.306		Assume PM10 is 100% of PM
SO2			1000 lbs	0.131		Eng. Stack Test Nov. 2002	
CO			1000 lbs	0.020		Eng. Stack Test Feb 2005	
NOx			1000 lbs	1.29		Oct. 05 Engineering Stack Test	
VOC			1000 lbs	0.0050		AP-42 9/98,Table 1.1-19, PC, methane & TNMOC	
- COAL		Lead	Tons	4.20E-04		EPA AP-42,Table 1.1-18	
		Fluorine	Tons	6.34E-03		Mass balance based on USGS data	
		Beryllium	Tons	2.10E-05		EPA AP-42,Table 1.1-18	
		Mercury	Tons	7.00E-05		Mass balance based on USGS data	
		H2SO4	Tons	3.31E-01		EPA AP-42,Table 1.1-3, footnote b.	

## **Attachment D**

### **Air Quality Impact Analysis**

2007 Juice Run

Air Quality  
Impact Analysis

for the

The Amalgamated Sugar Company LLC  
Paul, Idaho

February 23, 2007

## 1.0 **INTRODUCTION**

An ambient air quality analysis for the Amalgamated Sugar Company LLC's (TASCO) Paul facility, for the 2007 Juice Run was completed. The analysis was performed at TASCO's corporate engineering offices.

## 2.0 **INPUT PARAMETERS**

The facility operates at a significantly reduced rate during the juice run compared to beet processing operations. Juice run emissions are approximately 10% of the beet processing emission rates. Table 1 presents the estimated PM10, NOx, SO<sub>2</sub>, and CO emission rates for the Erie City and B&W Boilers. Table 2 details the stack parameters including stack height, exhaust temperature and the exhaust flow rate. The elevation of the boilers has been established at 1263 meters above mean sea level. Figure 1 illustrates the source and building locations.

## 3.0 **MODEL**

This revised modeling analysis utilized the Breeze suite of programs using EPA's ISCST3 model version 04269 and BPIP Prime model version 4274. Previous modeling was conducted utilizing the ISCST3-Prime model.

## 4.0 **METEOROLOGY**

This analysis used meteorological data (met data) modified and used by the Idaho Department of Environmental Quality (IDEQ) in their verification modeling for TASCO's PTC for the Evaporator Project (memorandum from Kevin Schilling to Dustin Holloway, September 20, 2002). This met data was initially collected at the J. R. Simplot facility in Heyburn and upper air data from the Boise Airport. As mentioned in the above listed memo, the file was modified by IDEQ to more accurately reflect mixing heights in cases where some days gave "unrealistically low mixing heights". The met data was for the period September 1, 2000 to August 31, 2001.

## 5.0 **RECEPTOR GRID**

The dispersion model included boundary receptors and two receptor grids. Figure 2 illustrates the fence line receptors and grid receptors. Figure 3 illustrates the location of the Highest Annual concentration identified in this model. The facility boundary was extended to include the TASCO owned South Farm.

The full receptor grid consists of several receptor grids. Originally, receptors were placed every 200 meters on an 8.0 km by 10.8 km area grid, (2200 grid points) with the facility placed in the middle. Receptors were excluded within the facility boundaries, which includes the beet handling area, waste ponds, coal storage area, irrigation fields and the physical plant due to restricted public access. Fence (boundary) receptors were placed at the perimeter of the facility on a 50-meter spacing starting with the northwest corner of the property owned and controlled by TASCO (as suggested in IDEQ's Air Quality Modeling Guideline). Based upon the results of initial simulations, a refined 2.5 km by 2 km receptor grid with 50 meter spacing between

receptors was placed around the facility with an eastern most boundary at the public road 400 West. The smaller grid is represented by grid patterns of 51 by 41 (2091) receptors. The placement of the smaller 50-meter grid pattern was determined by evaluating previous model output and prevailing wind patterns.

On February 10, 2003, TASCO notified the IDEQ Regional Office at Twin Falls that it had purchased 89 acres north of the facility. The area purchased is called the Gillette-89. On January 23, 2004, TASCO again notified the IDEQ Regional Office at Twin Falls that it had purchased 87 acres known as the Goitiandia property also located north of the facility. The purchase and control of this property is reflected in the updated fence line receptors north of the facility.

Terrain elevations for the receptors were obtained from USGS digital elevation model (DEM) 7.5-minute Rupert, Rupert\_NW, Burley and Burley\_NE quadrangles. These data have a horizontal spatial resolution of 30 meters. The receptor locations are expressed in units of UTM (NAD27) coordinates.

#### 6.0 **BACKGROUND CONCENTRATION**

Background concentrations provided in Table 3, are conservative values provided by IDEQ. These values are likely well above actual concentrations. Background concentrations vary based on meteorological conditions and season. For example, 24-hour PM10 ambient monitoring data collected in Heyburn Idaho by J.R. Simplot from November 2000 thru January 2001 averaged  $19.7 \text{ ug/m}^3$  (micrograms per cubic meter).

#### 7.0 **RESULTS and CONCLUSIONS**

Table 3 presents the results of the analysis. The highest model-predicted concentrations occurred at UTM Coordinates 274,600 meters Easting by 4,720,800 meters Northing. Figure 3 illustrates the location of the maximum model-predicted concentrations.

As shown, model predicted ambient concentrations along with background concentrations are well below the NAAQS's.

**Table 1. Paul Modeled Pollutant Emissions –  
2007 Juice Run on Coal**

Pollutant	Emission Rates (lb/hr)	
	B & W Boiler	Erie City Boiler
	P-B1	P-B2
PM <sub>10</sub> Long Term	8.1	1.8
PM <sub>10</sub> Short Term	---	45.9
SO <sub>2</sub> Long Term	8.4	0.8
SO <sub>2</sub> Short Term	27.6	---
NO <sub>x</sub> Long Term	---	7.4
CO Short Term	47.4	---

**Table 2. Stack Data for Stationary Point Sources**

Emission Source (Point)	Source ID	Stack			Temperature (°F)	Exit Velocity <sup>1</sup> (ft / min)	Stack Diameter <sup>2</sup> (ft)
		Height (ft)	UTM Easting (m)	UTM Northing (m)			
Erie City Boiler	P-B2	112	273819	4721176	105	1524	10
Drying Granulator	P-W1	85	273780	4721248	90.05	4776	2.0

**Table 3. Maximum Predicted Concentrations**

Constituent	Period	Concentrations (ug / m <sup>3</sup> )	Background Concentration (ug / m <sup>3</sup> )	Total Concentration (ug / m <sup>3</sup> )	NAAQS Concentration (ug / m <sup>3</sup> )
PM 10	24-hour 2 <sup>nd</sup> highest	20.0	73	93	150
	Annual 1 <sup>st</sup> highest	1.33	27	30.95	50
SO <sub>2</sub>	3-hour 2 <sup>nd</sup> highest	43.2	34	141	1300
	24-hour 2 <sup>nd</sup> highest	13.8	26	57.9	365
	Annual 1 <sup>st</sup> highest	1.06	8	13.8	80
CO	1-hour 2 <sup>nd</sup> highest	138	3600	3616	40,000
	8-hour 2 <sup>nd</sup> highest	46.3	2300	2305	10,000
NO <sub>x</sub>	Annual 1 <sup>st</sup> highest	5.72	17	32.5	100

**Figure 1. Facility Layout Showing Buildings, Tanks, and Stacks**

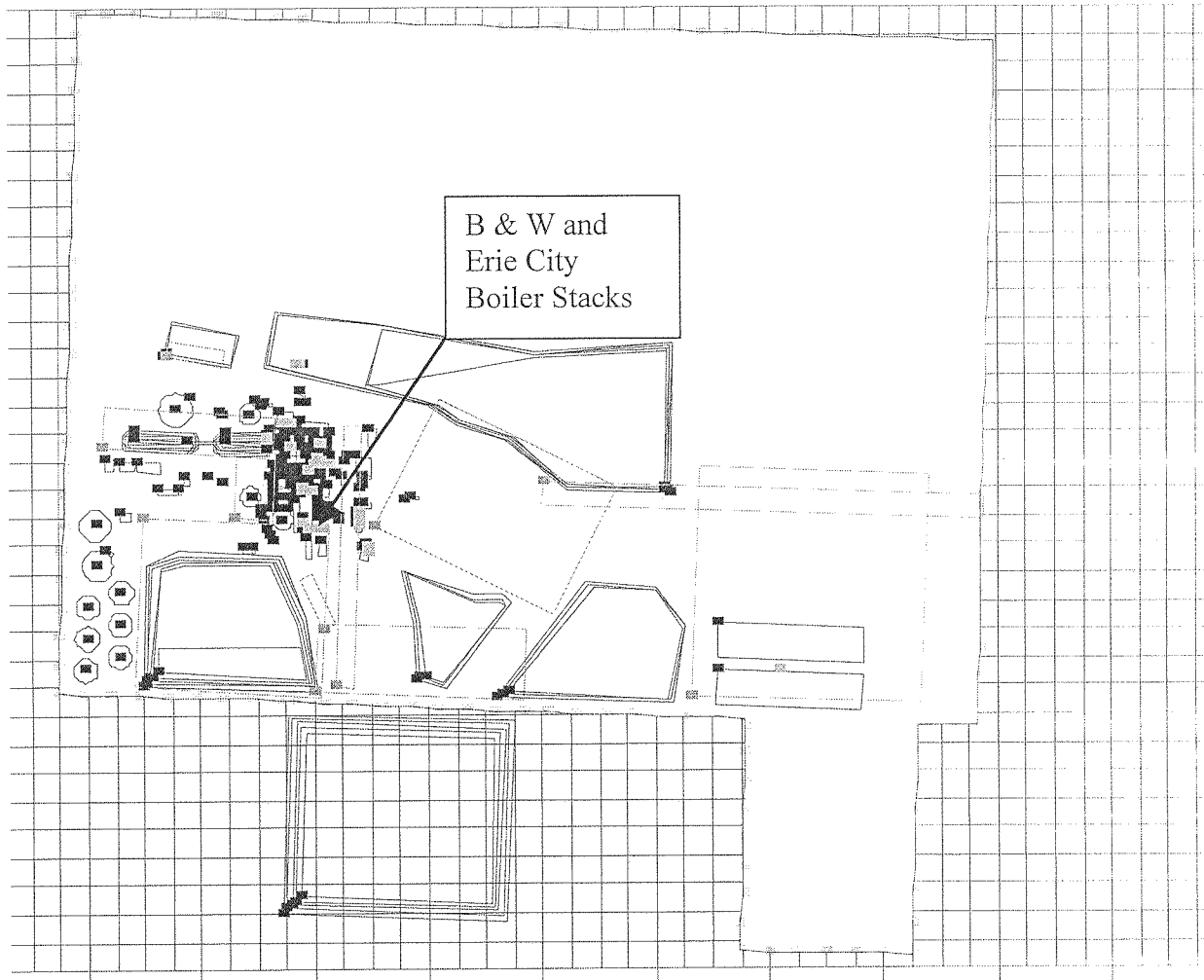
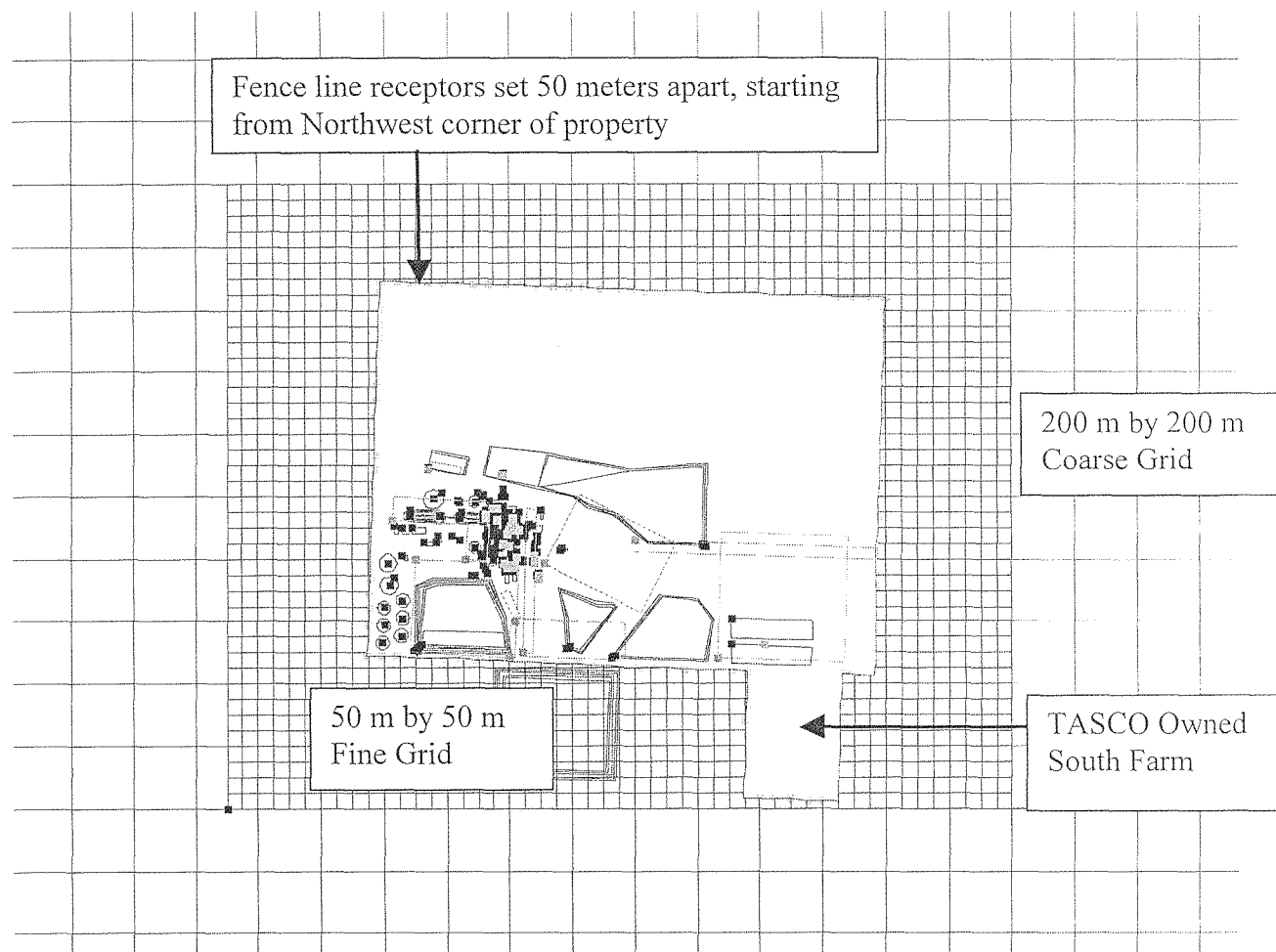


Figure 2. Fence Line and Receptor Grid



**Toxic Air Pollutant  
Air Quality Impact Analysis  
Boiler Emissions  
2007 Juice Run  
Mini-Cassia Facility**

Maximum Annual Air Toxics Analysis  
Additional 110,000 klb Boiler Steam  
2007 Juice Run  
Mini Cassia Facility

Pollutant	AAAC (ug/m3)	2002 Application		Projected 2007 Juice Run	
		Emissions (lb/h)	Impact (ug/m3)	Emissions (lb/h)	Impact (ug/m3)
Arsenic Compounds	2.3E-04	1.7E-04	7.3E-06	3.6E-04	1.5E-05
Cadmium Compounds	5.6E-04	2.1E-05	9.0E-07	4.4E-05	1.9E-06
Hexavalent Chromium	8.3E-05	3.3E-05	1.5E-07	7.0E-05	3.2E-07
Nickel	4.2E-03	1.2E-04	5.0E-06	2.5E-04	1.1E-05
Acetaldehyde	4.5E-01	2.4E-04	1.0E-05	5.1E-04	2.1E-05
Formaldehyde	7.7E-02	6.0E-04	2.6E-05	1.3E-03	5.5E-05
Methyl Hydrazine	3.2E-03	7.0E-05	3.1E-06	1.5E-04	6.5E-06

# **APPENDIX C AIR QUALITY IMPACT ANALYSIS EVAPORATOR PROJECT**



The Amalgamated Sugar Co. LLC  
Mini-Cassia Factory  
Paul, Idaho

Prepared by:  
ENSR® Corporation  
Sacramento, California

August, 2002  
Project Number 10036-003

Table 9

Maximum Annual Air Toxic Impacts at the Mini-Cassia Factory, Estimated with ISCST3

Pollutant	AAAC ( $\mu\text{g}/\text{m}^3$ )	Maximum Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Location	
			X (m)	Y (m)
Acetaldehyde	4.5E-1	4.1E-1	178	281
Arsenic Compounds	2.3E-4	7.3E-6	720	-388
Cadmium Compounds	5.6E-4	9.0E-7	720	-388
Hexavalent Chromium	8.3E-5	1.5E-7	720	-388
Formaldehyde	7.7E-2	5.2E-2	178	281
Methyl Hydrazine	3.2E-3	3.1E-6	720	-388
Nickel	4.2E-3	5.0E-6	720	-388

The air toxic compounds with the largest annual offsite impacts are formaldehyde and acetaldehyde. The maximum modeled annual acetaldehyde and formaldehyde impacts occur along the northwestern facility fence line. The locations of the maximum impacts are given in Figure 4. The peak annual impact locations for the remaining pollutants also occur along the northern property boundary.

The input and output modeling files are given in the attached CD-ROM containing the air quality modeling files.

**TAP's EI  
2002 Application**

TABLE B-6. TOXIC AIR POLLUTANT EMISSION FACTORS, EMISSIONS INCREASE, AND SCREENING EMISSION LEVELS (EL)

Compound	Beet End				Erie City Boiler				Total		Exceeds EL? (yes/no)
	Emission Factor (lb/ton beets)	Annual Emission Increase (lb/yr) <sup>(1)</sup>	Hourly Emission Increase (lb/hr) <sup>(1)</sup>	Emission Factor Reference	Emission Factor (lb/1000 steam) <sup>(2,3)</sup>	Annual Emission Increase (lb/yr) <sup>(4)</sup>	Hourly Emission Increase (lb/hr) <sup>(5)</sup>	Emission Factor Reference	Hourly Emission Increase (lb/hr)	EL (lb/hr)	
Non-Carcinogenic Compounds											
Acetophenone	--	--	--	--	1.0E-06	5.4E-02	1.2E-05	AP-42, 1.1-14	1.2E-05	NA	no
Acrolein	5.7E-05	3.6E+01	8.3E-03	Source Test	2.0E-05	1.1E+00	2.3E-04	AP-42, 1.1-14	8.5E-03	0.017	no
Ammonia	6.4E-01	4.1E+05	9.3E+01	Source Test	--	--	--	AP-42, 1.1-14	9.3E+01	1.2	yes
Antimony	--	--	--	--	1.3E-06	6.5E-02	1.4E-05	AP-42, 1.1-18	1.4E-05	0.033	no
Benzyl Chloride	--	--	--	--	4.9E-05	2.5E+00	5.6E-04	AP-42, 1.1-14	5.6E-04	NA	no
Bromoform	--	--	--	--	2.7E-06	1.4E-01	3.1E-05	AP-42, 1.1-14	3.1E-05	0.333	no
Carbon Disulfide	--	--	--	--	9.0E-06	4.7E-01	1.0E-04	AP-42, 1.1-14	1.0E-04	2	no
2-Chloroacetophenone	--	--	--	--	4.9E-07	2.5E-02	5.6E-06	AP-42, 1.1-14	5.6E-06	NA	no
Chlorobenzene	--	--	--	--	1.5E-06	8.0E-02	1.8E-05	AP-42, 1.1-14	1.8E-05	23.3	no
Chromium (Total)	--	--	--	--	1.8E-05	9.4E-01	2.1E-04	AP-42, 1.1-18	2.1E-04	0.033	no
Cobalt	--	--	--	--	7.0E-06	3.6E-01	8.0E-05	AP-42, 1.1-18	8.0E-05	0.0033	no
Cumene	--	--	--	--	3.7E-07	1.9E-02	4.2E-06	AP-42, 1.1-14	4.2E-06	16.3	no
Cyanide	--	--	--	--	1.7E-04	9.1E+00	2.0E-03	AP-42, 1.1-14	2.0E-03	0.333	no
2,4-Dinitrotoluene	--	--	--	--	1.9E-08	1.0E-03	2.2E-07	AP-42, 1.1-14	2.2E-07	NA	no
Dimethyl Sulfate	--	--	--	--	3.3E-06	1.7E-01	3.8E-05	AP-42, 1.1-14	3.8E-05	NA	no
Ethyl Benzene	--	--	--	--	6.5E-06	3.4E-01	7.5E-05	AP-42, 1.1-14	7.5E-05	29	no
Ethyl Chloride	--	--	--	--	2.9E-06	1.5E-01	3.3E-05	AP-42, 1.1-14	3.3E-05	176	no
Ethylene Dichloride	--	--	--	--	2.8E-06	1.5E-01	3.2E-05	AP-42, 1.1-14	3.2E-05	2.667	no
Fluorides, as F	--	--	--	--	1.0E-02	5.4E+02	1.2E-01	AP-42, 1.1-15	1.2E-01	0.167	no
Hexane	--	--	--	--	4.7E-06	2.4E-01	5.3E-05	AP-42, 1.1-14	5.3E-05	12	no
Hydrogen Chloride	--	--	--	--	1.1E-02	5.8E+02	1.3E-01	2001 TCRI	1.3E-01	0.05	yes
Hydrogen Sulfide	--	--	--	--	ND	--	--	--	--	0.933	no
Isophorone	--	--	--	--	4.0E-05	2.1E+00	4.6E-04	AP-42, 1.1-14	4.6E-04	1.867	no
Lead	--	--	--	--	2.9E-05	1.5E+00	3.3E-04	AP-42, 1.1-18	3.3E-04	NA	no
Magnesium	--	--	--	--	7.7E-04	4.0E+01	8.8E-03	AP-42, 1.1-18	8.8E-03	NA	no

TABLE B-6. TOXIC AIR POLLUTANT EMISSION FACTORS, EMISSIONS INCREASE, AND SCREENING EMISSION LEVELS (EL)

Compound	Beet End				Erie City Boiler				Total		Exceeds EL? (yes/no)
	Emission Factor (lb/ton beets)	Annual Emission Increase (lb/yr) <sup>(1)</sup>	Hourly Emission Increase (lb/hr) <sup>(1)</sup>	Emission Factor Reference	Emission Factor (lb/1000 lb steam) <sup>(2,3)</sup>	Annual Emission Increase (lb/yr) <sup>(4)</sup>	Hourly Emission Increase (lb/hr) <sup>(5)</sup>	Emission Factor Reference	Hourly Emission Increase (lb/hr)	EL (lb/hr)	
Non-Carcinogenic Compounds	Manganese	--	--	--	--	3.4E-05	3.9E-04	AP-42, 1.1-18	3.9E-04	0.333	no
	Mercury	--	--	--	--	5.8E-06	6.6E-05	AP-42, 1.1-18	6.6E-05	0.007	no
	Methyl Bromide	--	--	--	--	1.1E-05	1.3E-04	AP-42, 1.1-14	1.3E-04	1.27	no
	Methyl Chloride	--	--	--	--	3.7E-05	4.2E-04	AP-42, 1.1-14	4.2E-04	6.867	no
	Methyl Ethyl Ketone	1.2E-06	7.4E-01	1.7E-04	Source Test	2.7E-05	3.1E-04	AP-42, 1.1-14	4.8E-04	39.3	no
	Methyl Methacrylate	--	--	--	--	1.4E-06	1.6E-05	AP-42, 1.1-14	1.6E-05	27.3	no
	Methyl Tert Butyl Ether	--	--	--	--	2.4E-06	2.8E-05	AP-42, 1.1-14	2.8E-05	NA	no
	Naphthalene	--	--	--	--	9.0E-07	1.0E-05	AP-42, 1.1-13	1.0E-05	3.33	no
	Phenol	--	--	--	--	1.1E-06	1.3E-05	AP-42, 1.1-14	1.3E-05	1.27	no
	Propionaldehyde	--	--	--	--	2.6E-05	3.0E-04	AP-42, 1.1-14	3.0E-04	0.0287	no
	Selenium	--	--	--	--	9.0E-05	1.0E-03	AP-42, 1.1-18	1.0E-03	0.013	no
	Styrene	--	--	--	--	1.7E-06	2.0E-05	AP-42, 1.1-14	2.0E-05	6.67	no
	Sulfuric Acid	--	--	--	--	1.0E-02	5.4E+02	AP-42, 1.1-3	1.2E-01	0.067	yes
	Toluene	--	--	--	--	1.7E-05	1.9E-04	AP-42, 1.1-14	1.9E-04	25	no
Carcinogenic Compounds <sup>(6)</sup>	Xylene (Total)	--	--	--	--	2.6E-06	2.9E-05	AP-42, 1.1-14	2.9E-05	29	no
	Vinyl Acetate	--	--	--	--	5.3E-07	6.1E-06	AP-42, 1.1-14	6.1E-06	NA	no
	Acetaldehyde	9.6E-03	6.1E+03	7.0E-01	Source Test	4.0E-05	2.4E-04	AP-42, 1.1-14	7.0E-01	3.0E-03	yes
	Arsenic Compounds	--	--	--	--	2.9E-05	1.7E-04	AP-42, 1.1-18	1.7E-04	1.5E-06	yes
	Asbestos	--	--	--	--	ND	--	--	--	ND	--
	Benzene	--	--	--	--	9.0E-05	5.4E-04	AP-42, 1.1-14	5.4E-04	8.0E-04	no
	Beryllium Compounds	--	--	--	--	1.5E-06	8.7E-06	AP-42, 1.1-18	8.7E-06	2.8E-05	no
	Bis(2-ethylhexyl)phthalate	--	--	--	--	5.1E-06	3.0E-05	AP-42, 1.1-14	3.0E-05	2.8E-02	no
	Cadmium Compounds	--	--	--	--	3.5E-06	2.1E-05	AP-42, 1.1-18	2.1E-05	3.7E-06	yes
	Chloroform	--	--	--	--	4.1E-06	2.4E-05	AP-42, 1.1-14	2.4E-05	2.8E-04	no
	Chromium 6+ Compounds	--	--	--	--	5.5E-06	3.3E-05	AP-42, 1.1-18	3.3E-05	5.6E-07	yes

TABLE B-6. TOXIC AIR POLLUTANT EMISSION FACTORS, EMISSIONS INCREASE, AND SCREENING EMISSION LEVELS (EL)

Compound	Beet End				Erie City Boiler				Total	Exceeds EL? (yes/no)		
	Emission Factor (lb/ton beets)	Annual Emission Increase (lb/yr) <sup>(1)</sup>	Hourly Emission Increase (lb/hr) <sup>(1)</sup>	Emission Factor Reference	Emission Factor (lb/1000 lb steam) <sup>(2,3)</sup>	Annual Emission Increase (lb/yr) <sup>(4)</sup>	Hourly Emission Increase (lb/hr) <sup>(5)</sup>	Emission Factor Reference				
Carcinogenic Compounds <sup>(6)</sup>	Ethylene Dibromide	--	--	--	--	8.4E-08	4.4E-03	5.0E-07	AP-42, 1.1-14	5.0E-07	3.0E-05	no
	Formaldehyde	1.2E-03	7.7E+02	8.8E-02	Source Test	1.0E-04	5.3E+00	6.0E-04	AP-42, 1.4-3	8.8E-02	5.1E-04	yes
	Methyl Hydrazine	--	--	--	--	1.2E-05	6.2E-01	7.0E-05	AP-42, 1.1-14	7.0E-05	2.2E-05	yes
	Methylene Chloride	--	--	--	--	2.0E-05	1.1E+00	1.2E-04	AP-42, 1.1-14	1.2E-04	1.6E-03	no
	Nickel	--	--	--	--	1.9E-05	1.0E+00	1.2E-04	AP-42, 1.1-18	1.2E-04	2.7E-05	yes
	PAHs	--	--	--	--	5.4E-07	2.8E-02	3.2E-06	AP-42, 1.1-13	3.2E-06	9.1E-05	no
	POM	--	--	--	--	2.7E-08	1.4E-03	1.6E-07	AP-42, 1.1-13	1.6E-07	2.0E-06	no
	Tetrachloroethylene	--	--	--	--	3.0E-06	1.6E-01	1.8E-05	AP-42, 1.1-14	1.8E-05	1.3E-02	no
	1,1,1-Trichloroethane	--	--	--	--	1.4E-06	7.3E-02	8.3E-06	AP-42, 1.1-14	8.3E-06	4.2E-04	no
Vinyl Chloride	--	--	--	--	ND					9.40E-04	no	

ND - Value not available

(1) Increased annual Beet End carcinogenic and non-carcinogenic emissions were calculated from the emission factor and increased annual beet slice in Table B-1. Increased hourly Beet End non-carcinogenic emissions were calculated from the emission factor and increased daily beet slice in Table B-1.

(2) AP-42 emission factors for bituminous and subbituminous coal were compared with emission factors for gas after being converted to units of lb/1000 lb steam. The larger factors were used in this inventory. The emission factor for formaldehyde was the only larger factor for gas.

(3) AP-42 coal emission factors in units of lb/ton coal were converted to units of lb/1,000 lb steam using 1,080 Btu/lb steam, 9,700 Btu/lb coal, and the assumption of 80% efficiency for the Boiler. AP-42 gas emission factors in units of lb/MMcf gas were converted to units of lb/1,000 lb steam using 1,080 Btu/lb steam, 1,000 Btu/MMcf, and the assumption of 80% efficiency for the Boiler.

(4) Increased annual boiler carcinogenic and non-carcinogenic emissions were calculated from the emission factor and increased annual steam utilization in Table B-1.

(5) For non-carcinogenic compounds emitted from the boiler, there is no hourly emissions increase because this project does not increase the hourly sugar production rate and therefore does not increase hourly boiler utilization. However, hourly emission increase has been conservatively estimated by dividing the annual emissions increase by the projected annual operating hours (190 days \* 24 hr/day = 4,560 hr).

(6) Hourly carcinogenic compound emissions from the Beet End and Erie City boiler were annualized by dividing the annual increase by 8,760 hours.

**TAP's EI**  
**110,000 Klb Steam**

LOCAL AIR POLLUTANT EMISSION FACTORS, EMISSIONS INCREASE, AND SCREENING EMISSION LEVELS (EL)"

Compound		Erie City Boiler				Total	EL (lb/hr)	Exceeds EL? (yes/no)
		Emission Factor (lb/1000 lb steam) <sup>(2,3)</sup>	Annual Emission Increase (lb/yr) <sup>(4)</sup>	Hourly Emission Increase (lb/hr) <sup>(5)</sup>	Emission Factor Reference	Hourly Emission Increase (lb/hr)		
Non-Carcinogenic Compounds	Acetophenone	1.0E-06	1.1E-01	2.5E-05	AP-42, 1.1-14	2.5E-05	NA	no
	Acrolein	2.0E-05	2.2E+00	4.9E-04	AP-42, 1.1-14	4.9E-04	0.017	no
	Ammonia	--	--	--	AP-42, 1.1-14	--	1.2	no
	Antimony	1.3E-06	1.4E-01	3.0E-05	AP-42, 1.1-18	3.0E-05	0.033	no
	Benzyl Chloride	4.9E-05	5.4E+00	1.2E-03	AP-42, 1.1-14	1.2E-03	NA	no
	Bromoform	2.7E-06	3.0E-01	6.5E-05	AP-42, 1.1-14	6.5E-05	0.333	no
	Carbon Disulfide	9.0E-06	1.0E+00	2.2E-04	AP-42, 1.1-14	2.2E-04	2	no
	2-Chloroacetophenone	4.9E-07	5.4E-02	1.2E-05	AP-42, 1.1-14	1.2E-05	NA	no
	Chlorobenzene	1.5E-06	1.7E-01	3.7E-05	AP-42, 1.1-14	3.7E-05	23.3	no
	Chromium (Total)	1.8E-05	2.0E+00	4.4E-04	AP-42, 1.1-18	4.4E-04	0.033	no
	Cobalt	7.0E-06	7.7E-01	1.7E-04	AP-42, 1.1-18	1.7E-04	0.0033	no
	Cumene	3.7E-07	4.1E-02	8.9E-06	AP-42, 1.1-14	8.9E-06	16.3	no
	Cyanide	1.7E-04	1.9E+01	4.2E-03	AP-42, 1.1-14	4.2E-03	0.333	no
	2,4-Dinitrotoluene	1.9E-08	2.1E-03	4.7E-07	AP-42, 1.1-14	4.7E-07	NA	no
	Dimethyl Sulfate	3.3E-06	3.7E-01	8.1E-05	AP-42, 1.1-14	8.1E-05	NA	no
	Ethyl Benzene	6.5E-06	7.2E-01	1.6E-04	AP-42, 1.1-14	1.6E-04	29	no
	Ethyl Chloride	2.9E-06	3.2E-01	7.1E-05	AP-42, 1.1-14	7.1E-05	176	no
	Ethylene Dichloride	2.8E-06	3.1E-01	6.7E-05	AP-42, 1.1-14	6.7E-05	2.667	no
	Fluorides, as F	1.0E-02	1.1E+03	2.5E-01	AP-42, 1.1-15	2.5E-01	0.167	yes
	Hexane	4.7E-06	5.1E-01	1.1E-04	AP-42, 1.1-14	1.1E-04	12	no
	Hydrogen Chloride	1.1E-02	1.2E+03	2.7E-01	2001 TCRI	2.7E-01	0.05	yes
	Hydrogen Sulfide	ND					0.933	no
	Isophorone	4.0E-05	4.4E+00	9.7E-04	AP-42, 1.1-14	9.7E-04	1.867	no
	Lead	2.9E-05	3.2E+00	7.1E-04	AP-42, 1.1-18	7.1E-04	NA	no
	Magnesium	7.7E-04	8.4E+01	1.8E-02	AP-42, 1.1-18	1.8E-02	NA	no
	Manganese	3.4E-05	3.8E+00	8.2E-04	AP-42, 1.1-18	8.2E-04	0.333	no
	Mercury	5.8E-06	6.4E-01	1.4E-04	AP-42, 1.1-18	1.4E-04	0.007	no
Non-Carcinogenic Compounds	Methyl Bromide	1.1E-05	1.2E+00	2.7E-04	AP-42, 1.1-14	2.7E-04	1.27	no
	Methyl Chloride	3.7E-05	4.1E+00	8.9E-04	AP-42, 1.1-14	8.9E-04	6.867	no
	Methyl Ethyl Ketone	2.7E-05	3.0E+00	6.5E-04	AP-42, 1.1-14	6.5E-04	39.3	no
	Methyl Methacrylate	1.4E-06	1.5E-01	3.4E-05	AP-42, 1.1-14	3.4E-05	27.3	no
	Methyl Tert Butyl Ether	2.4E-06	2.7E-01	5.9E-05	AP-42, 1.1-14	5.9E-05	NA	no
	Naphthalene	9.0E-07	1.0E-01	2.2E-05	AP-42, 1.1-13	2.2E-05	3.33	no
	Phenol	1.1E-06	1.2E-01	2.7E-05	AP-42, 1.1-14	2.7E-05	1.27	no
	Propionaldehyde	2.6E-05	2.9E+00	6.4E-04	AP-42, 1.1-14	6.4E-04	0.0287	no
	Selenium	9.0E-05	1.0E+01	2.2E-03	AP-42, 1.1-18	2.2E-03	0.013	no
	Styrene	1.7E-06	1.9E-01	4.2E-05	AP-42, 1.1-14	4.2E-05	6.67	no
	Sulfuric Acid	1.0E-02	1.1E+03	2.5E-01	AP-42, 1.1-3	2.5E-01	0.067	yes
	Toluene	1.7E-05	1.8E+00	4.0E-04	AP-42, 1.1-14	4.0E-04	25	no
	Xylene (Total)	2.6E-06	2.8E-01	6.2E-05	AP-42, 1.1-14	6.2E-05	29	no
	Vinyl Acetate	5.3E-07	5.8E-02	1.3E-05	AP-42, 1.1-14	1.3E-05	NA	no
Carcinogenic Compounds <sup>(6)</sup>	Acetaldehyde	4.0E-05	4.4E+00	5.0E-04	AP-42, 1.1-14	5.0E-04	3.0E-03	no
	Arsenic Compounds	2.9E-05	3.1E+00	3.6E-04	AP-42, 1.1-18	3.6E-04	1.5E-06	yes
	Asbestos	ND					ND	

LOCAL AIR POLLUTANT EMISSION FACTORS, EMISSIONS INCREASE, AND SCREENING EMISSION LEVELS (EL)"

Compound		Erie City Boiler				Total	EL (lb/hr)	Exceeds EL? (yes/no)
		Emission Factor (lb/1000 lb steam) <sup>(2,3)</sup>	Annual Emission Increase (lb/yr) <sup>(4)</sup>	Hourly Emission Increase (lb/hr) <sup>(5)</sup>	Emission Factor Reference	Hourly Emission Increase (lb/hr)		
	Benzene	9.0E-05	1.0E+01	1.1E-03	AP-42, 1.1-14	1.1E-03	8.0E-04	yes
	Beryllium Compounds	1.5E-06	1.6E-01	1.8E-05	AP-42, 1.1-18	1.8E-05	2.8E-05	no
	Bis(2-ethylhexyl)phthalate	5.1E-06	5.6E-01	6.4E-05	AP-42, 1.1-14	6.4E-05	2.8E-02	no
	Cadmium Compounds	3.5E-06	3.9E-01	4.5E-05	AP-42, 1.1-18	4.5E-05	3.7E-06	yes
	Chloroform	4.1E-06	4.5E-01	5.2E-05	AP-42, 1.1-14	5.2E-05	2.8E-04	no
	Chromium 6+ Compounds	5.5E-06	6.0E-01	6.9E-05	AP-42, 1.1-18	6.9E-05	5.6E-07	yes
	Ethylene Dibromide	8.4E-08	9.2E-03	1.0E-06	AP-42, 1.1-14	1.0E-06	3.0E-05	no
	Formaldehyde	1.0E-04	1.1E+01	1.3E-03	AP-42, 1.4-3	1.3E-03	5.1E-04	yes
	Methyl Hydrazine	1.2E-05	1.3E+00	1.5E-04	AP-42, 1.1-14	1.5E-04	2.2E-05	yes
	Methylene Chloride	2.0E-05	2.2E+00	2.5E-04	AP-42, 1.1-14	2.5E-04	1.6E-03	no
Carcinogenic Compounds <sup>(6)</sup>	Nickel	1.9E-05	2.1E+00	2.4E-04	AP-42, 1.1-18	2.4E-04	2.7E-05	yes
	PAHs	5.4E-07	5.9E-02	6.8E-06	AP-42, 1.1-13	6.8E-06	9.1E-05	no
	POM	2.7E-08	3.0E-03	3.4E-07	AP-42, 1.1-13	3.4E-07	2.0E-06	no
	Tetrachloroethylene	3.0E-06	3.3E-01	3.8E-05	AP-42, 1.1-14	3.8E-05	1.3E-02	no
	1,1,1-Trichloroethane	1.4E-06	1.5E-01	1.7E-05	AP-42, 1.1-14	1.7E-05	4.2E-04	no
	Vinyl Chloride	ND					9.40E-04	no
Total (tons/y)			2					

ND - Value not available

(1) Increased annual Beet End carcinogenic and non-carcinogenic emissions were calculated from the emission factor and increased annual beet slice in Table B-1. Increased hourly Beet End non-carcinogenic emissions were calculated from the emission factor and increased daily beet slice in Table B-1.

(2) AP-42 emission factors for bituminous and subbituminous coal were compared with emission factors for gas after being converted to units of lb/1000 lb steam. The larger factors were used in this inventory. The emission factor for formaldehyde was the only larger factor for gas.

(3) AP-42 coal emission factors in units of lb/ton coal were converted to units of lb/1,000 lb steam using 1,080 Btu/lb steam, 9,700 Btu/lb coal, and the assumption of 80% efficiency for the Boiler. AP-42 gas emission factors in units of lb/MMcf gas were converted to units of lb/1,000 lb steam using 1,080 Btu/lb steam, 1,000 Btu/MMcf, and the assumption of 80% efficiency for the Boiler.

(4) Increased annual boiler carcinogenic and non-carcinogenic emissions were calculated from the emission factor and increased annual steam utilization in Table B-1.

(5) For non-carcinogenic compounds emitted from the boiler, there is no hourly emissions increase because this project does not increase the hourly sugar production rate and therefore does not increase hourly boiler utilization. However, hourly emission increase has been conservatively estimated by dividing the annual emissions increase by the projected annual operating hours (190 days \*24 hr/day = 4,560 hr).

(6) Hourly carcinogenic compound emissions from the Beet End and Erie City boiler were annualized by dividing the annual increase by 8,760 hours.

## **Attachment E**

### **Proposed Revisions to Condition 2.4 of the No. 6 Evaporator Permit to Construct**

**AIR QUALITY PERMIT TO CONSTRUCT NUMBER: P-050401**

Permittee: TASCO – MiniCassia Facility

Location: Paul, Idaho

Facility ID No. 067-00001

Date Issued: June 14, 2006

## **2. FACILITY LIMITS**

### **2.1 Process Description**

The No. 6 Evaporator is used to evaporate water from sugar juices to produce dry granulated sugar.

### ***Emissions Limits***

#### **2.2 Opacity Limit**

Emissions from any stack, vent, or functionally equivalent opening associated with the processing of beets or the production of sugar, shall not exceed 20% opacity for a period or periods aggregating more than three minutes in any 60-minute period as required by IDAPA 58.01.01.625 (Rules for the Control of Air Pollution in Idaho). Opacity shall be determined by the procedures contained in IDAPA 58.01.01.625.

#### **2.3 NO<sub>x</sub> Limit**

For the 2006 campaign juice run, the B&W boiler shall implement NO<sub>x</sub> reduction improvements to ensure net NO<sub>x</sub> emissions increases are no greater than the significance level.

### ***Operating Requirements***

#### **2.4 Beet Throughput Limits**

- Throughput of beets to the facility shall not exceed 19,550 T/day.
- Throughput of beets to the facility shall not exceed 3,200,000 tons per campaign year.

#### **2.5 Steam Production Limit**

**2.5.1** Steam production from the facility's boilers shall not exceed 1,830,000 Klbs of steam per campaign year (klb/yr) except as allowed by Condition 2.5.2.

**2.5.2** For the 2006 campaign year, the permittee shall not exceed an additional 110,000 Klbs steam from any combination of: (a) the B&W boiler using coal; or (b) the Erie City or Nebraska boilers using natural gas.

#### **2.6 Reasonable Control of Fugitive Emissions**

All reasonable precautions shall be taken to prevent PM from becoming airborne as required in IDAPA 58.01.01.651. In determining what is a reasonable, consideration will be given to factors such as the proximity of dust-emitting operations to human habitations and/or activities and atmospheric conditions that might affect the movement of PM. Some of the reasonable precautions include, but are not limited to, the following:

- Use, where practical, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of lands;
- Application, where practical, of asphalt, oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust;